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Claims

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1. An isolated lipopeptide comprising the formula represented in Figure 1.
2. The lipopeptide of claim 1, comprising a multilamellar liposome.
3. The lipopeptide of claim 1, comprising the formula represented in any one of Figure 1 or Figure 2.
4. The lipopeptide of claim 3, comprising a multilamellar liposome.
5. The lipopeptide of claim 1, comprising the formula represented in Figure 2.
6. The lipopeptide of claim 5, further comprising a multilamellar liposome.
7. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a therapeutically effective amount of the lipopeptide of claim 1; and a pharmaceutically acceptable carrier.

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8. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a therapeutically effective amount of the lipopeptide of claim 3; and a pharmaceutically acceptable carrier.

5 9. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a therapeutically effective amount of the lipopeptide of claim 5; and a pharmaceutically acceptable carrier.

10. A pharmaceutical composition useful in the treatment of neoplasia,  
10 comprising: a therapeutically effective amount of the lipopeptide of claim 6; and a pharmaceutically acceptable carrier.

11. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a first anti-neoplastic agent comprising a therapeutically effective amount of  
15 the lipopeptide of claim 1; a multilamellar liposome; a therapeutically effective amount of a second anti-neoplastic agent; and a pharmaceutically acceptable carrier.

12. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a first anti-neoplastic agent comprising a therapeutically effective amount of  
20 the lipopeptide of claim 3; a multilamellar liposome; a therapeutically effective amount of a second anti-neoplastic agent; and a pharmaceutically acceptable carrier.

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13. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a first anti-neoplastic agent comprising a therapeutically effective amount of the lipopeptide of claim 5; a therapeutically effective amount of a second anti-neoplastic 5 agent; and a pharmaceutically acceptable carrier.

14. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a first anti-neoplastic agent comprising a therapeutically effective amount of the lipopeptide of claim 6; a therapeutically effective amount of a second anti-neoplastic 10 agent; and a pharmaceutically acceptable carrier.

15. The pharmaceutical composition of claim 13, wherein said second anti-neoplastic agent or therapeutic is selected from the group consisting of: CPT-11; topoisomerase I inhibitors; paclitaxel; taxotere; modified taxane analogs; cisplatin; 15 doxorubicin; and ifosfamide.

16. The pharmaceutical composition of claim 14, wherein said second anti-neoplastic agent or therapeutic is selected from the group consisting of: CPT-11; topoisomerase I inhibitors; paclitaxel; taxotere; modified taxane analogs; cisplatin; 20 doxorubicin; and ifosfamide.

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17. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a therapeutically effective amount of the lipopeptide of claim 1; a multilamellar liposome; a therapeutically effective amount of one or more cytokines; and a pharmaceutically acceptable carrier.

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18. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a therapeutically effective amount of the lipopeptide of claim 4; a multilamellar liposome; a therapeutically effective amount of one or more cytokines; and a pharmaceutically acceptable carrier.

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19. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a therapeutically effective amount of the lipopeptide of claim 5; a therapeutically effective amount of one or more cytokines; and a pharmaceutically acceptable carrier.

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20. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a therapeutically effective amount of the lipopeptide of claim 6; a therapeutically effective amount of one or more cytokines; and a pharmaceutically acceptable carrier.

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21. The pharmaceutical composition of claim 19, wherein said one or more cytokines is selected from the group consisting of: TNF- $\alpha$ ; IL-1 $\beta$ ; IL-6; G-CSF; GM-CSF.

5 22. The pharmaceutical composition of claim 20, wherein said one or more cytokines is selected from the group consisting of: TNF- $\alpha$ ; IL-1 $\beta$ ; IL-6; G-CSF; GM-CSF.

10 23. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 7.

15 24. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 8.

25. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 9.

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26. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective

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amount of the pharmaceutical composition of claim 10.

27. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective 5 amount of the pharmaceutical composition of claim 11.

28. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 12.

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29. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 13.

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30. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 14.

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31. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 15.

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32. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 16.

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33. A pharmaceutical composition useful in the treatment of a side effect resulting from treatment of a subject with neoplasia, comprising: a therapeutically effective amount of the lipopeptide of claim 5; and a pharmaceutically acceptable carrier.

5 34. A pharmaceutical composition useful in the treatment of a side effect resulting from treatment of a subject with neoplasia, comprising: a therapeutically effective amount of the lipopeptide of claim 6; and a pharmaceutically acceptable carrier.

10 35. A method of treating a subject being treated with a neoplastic agent or therapeutic in an amount sufficient to cause a side effect, which method comprises administering to said subject the pharmaceutical composition of claim 33, in an amount effective to alleviate or prevent said side effect.

15 36. A method of treating a subject being treated with a neoplastic agent or therapeutic in an amount sufficient to cause a side effect selected from the group consisting of: myelosuppression, mucositis, and peripheral neuropathy, which method comprises administering to said subject the pharmaceutical composition of claim 33, in an amount effective to alleviate or prevent said side effect.

20 37. A method of treating a subject being treated with a neoplastic agent or therapeutic in an amount sufficient to cause a side effect, which method comprises

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administering to said subject the pharmaceutical composition of claim 34, in an amount effective to alleviate or prevent said side effect.

38. A method of treating a subject being treated with a neoplastic agent or therapeutic in an amount sufficient to cause a side effect selected from the group consisting of: myelosuppression, mucositis, and peripheral neuropathy, which method comprises administering to said subject the pharmaceutical composition of claim 34, in an amount effective to alleviate or prevent said side effect.
- 10 39. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 17.
- 15 40. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 18.
- 20 41. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 19.
42. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 20.

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43. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 21.

5 44. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 22.

10 45. A pharmaceutical composition useful in the treatment of neoplasia, comprising: a first anti-neoplastic agent comprising a therapeutically effective amount of a lipopeptide; a therapeutically effective amount of a second anti-neoplastic agent; and a pharmaceutically acceptable carrier, wherein the first neoplastic agent comprises a lipopeptide selected from the group consisting of: MTP-PE; MLV-MTP-PE; CGP31362; MLV-CGP31362; JBT3002; and MLV-JBT3002.

15 46. A method of treating neoplasia, comprising: administering to a subject with neoplasia by a clinically acceptable route of delivery a therapeutically effective amount of the pharmaceutical composition of claim 45.

20 47. The pharmaceutical composition of claim 7, further comprising a pharmaceutically acceptable carrier in tablet form.

48. The pharmaceutical composition of claim 8, further comprising a pharmaceutically acceptable carrier in tablet form.

25 49. A method of upregulating IL-15 production comprising, administering to a

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subject a pharmaceutical composition that comprises an isolated lipopeptide comprising the formula represented in Figure 1.

50. A method of upregulating IL-15 production comprising, administering to a  
5 subject a pharmaceutical composition that comprises an isolated lipopeptide comprising  
the formula represented in Figure 2.

51. A method of treating a subject being treated with a neoplastic agent or  
therapeutic in an amount sufficient to cause a side effect, which method comprises  
10 administering to said subject a pharmaceutical composition that in a therapeutically  
effective concentration upregulates IL-15 production.

52. The method of claim 51, wherein said pharmaceutical composition  
comprises an isolated lipopeptide comprising the formula represented in Figure 1.

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53. The method of claim 51, wherein said pharmaceutical composition  
comprises an isolated lipopeptide comprising the formula represented in Figure 2.